

### ABSTRACT

Degradation of the lubricant due to contamination of the lubricant with wear particles or moisture, which greatly affects the service life of rolling bearings, can be detected in a cost-effective manner through the use of a resonance frequency band signal or high-frequency signal of an accelerometer, and the service life of a rolling bearing can be estimated with high precision at an early stage on the basis of the detected state of the wear particles and lubricant.

Provided is a method comprising baseline data acquisition means for obtaining vibration signals by using an accelerometer 4 and using a testing device to acquire resonance frequency band signals detectable at the highest sensitivity, for each specification such as model number, manufacturer name, and other specifications for a rolling bearing 3 as pertains to the relationship between the state of wear particle penetration in a rolling bearing 3 and the vibration/bearing service life, and to lubricant degradation and vibration/bearing service life; measurement means whereby an accelerometer 4 is used to obtain vibration signals for the rolling bearing 3 whose remaining service life is being assessed and which resides on a fan, a pump, or another rotating device 1, 2, for the purpose of measuring resonance frequency band signals detectable at the highest sensitivity; and determination means for estimating the state of wear particle penetration and the state of lubricant degradation of

the diagnostic rolling bearing 3, and computing the remaining service life of the diagnostic rolling bearing 3 by using measurement values obtained by the measurement means, determination results of the bearing specification determination means, and data obtained by the baseline data acquisition means.